



# UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE  
United States Patent and Trademark Office  
Address: COMMISSIONER FOR PATENTS  
P.O. Box 1450  
Alexandria, Virginia 22313-1450  
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/690,174	10/21/2003	Nathan R. Draney	2269-5712US (02-1490.00/U)	3933
24247	7590	04/08/2005	EXAMINER	
TRASK BRITT P.O. BOX 2550 SALT LAKE CITY, UT 84110			BREWSTER, WILLIAM M	
			ART UNIT	PAPER NUMBER
			2823	

DATE MAILED: 04/08/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

**Office Action Summary**

Application No.

10/690,174

Applicant(s)

DRANEY ET AL.

Examiner

William M. Brewster

Art Unit

2823

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1) ☒ Responsive to communication(s) filed on 24 January 2005.
- 2a) ☒ This action is **FINAL**.                      2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 4) ☒ Claim(s) 1-28 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-28 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

**Application Papers**

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

**Priority under 35 U.S.C. § 119**

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All    b) ☐ Some \*    c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

**Attachment(s)**

- |   |   |
|---|---|
| 1) <input type="checkbox"/> Notice of References Cited (PTO-892)  | 4) <input type="checkbox"/> Interview Summary (PTO-413)<br>Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)  | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152)             |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)<br>Paper No(s)/Mail Date <u>012405</u> . | 6) <input type="checkbox"/> Other: _____  |

## DETAILED ACTION

The following rejection has been incorporated from the rejection sent 21 October 2004. It has been republished here for convenience.

### ***Claim Rejections - 35 USC § 102***

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

Claims 1-8, 20-23, 25, 27, 28 are rejected under 35 U.S.C. 102(e) as being anticipated by Baker, U.S. Publication No. 2003/0096507 A1.

Baker anticipates a method for processing a substrate, comprising:  
in fig. 1, providing a substrate of a first material having a bare surface, step 100;  
applying a layer of a second material to the bare surface, step 110;  
bonding the layer of the second material to the bare surface, step 110; and  
removing the first material and the second material from the substrate at substantially equal rates, step 120;

limitations from claim 2, the method wherein removing the first material and the second material from the substrate at substantially equal rates comprises

planarizing the substrate from the bare surface, p. 2, ¶ 21, wherein planarizing etches the claimed materials at substantially equal rates;

limitations from claim 3, the method wherein planarizing the substrate from the bare surface comprises substantially reducing an initial thickness of the

substrate, p. 2, ¶ 21, wherein planarizing removes some of the base material;

limitations from claim 4, the method of claim 1, wherein removing the first material and the second material from the substrate at substantially equal rates comprises substantially reducing an initial thickness of the substrate, p. 2, ¶ 21, wherein planarizing removes some of the base material, and also the observer may view "substantially" as a subjective term;

limitations from claim 5, the method wherein providing a substrate of a first material having a bare surface comprises providing a semiconductor substrate, p. 1, ¶ 16;

limitations from claim 6, the method of claim 5, wherein providing a semiconductor substrate comprises providing a wafer of silicon, gallium arsenide, germanium or indium phosphide: silicon substrate, p. 1, ¶ 16;

limitations from claim 7, the method wherein the bare surface comprises a backside of the semiconductor substrate, p. 1, ¶ 16;

limitations from claim 8, the method further comprising oxidizing the bare surface prior to applying the layer of the second material, in fig. 2C, oxide film 180, p. 2, ¶ 24;

limitations from claim 20, the method further comprising telling irregularities in a surface topography of the bare surface by applying the layer of second material thereto, fig. 2B, 185 and 190, wherein the surface of the substrate has irregular topography at fine enough scale;

limitations from claim 21, the method, wherein applying the layer of the second material to the bare surface comprises substantially covering the bare surface with the second material; fig. 2C, 180 and 190;

limitations from claim 22, the method wherein removing the first material and the second material from the substrate at substantially equal rates comprises at least one of wet etching, dry etching, grinding, abrasive planarization, and chemical-mechanical planarization: fig. 1, step 130, chemical-mechanical planarization, p. 2, ¶ 21;

limitations from claim 23, the method of claim 1, further comprising removing first material from the substrate prior to applying the second material to the bare surface: cleaning by etching, p. 1, ¶ 16;

limitations from claim 25, the method wherein removing the first material and the second material from the substrate at substantially equal rates comprises etching: wherein acid treatments, solvent treatments, oxidation/reduction treatments, and etch treatments contain some "substantial" etching of equal rates of compatible materials, p. 1, ¶ 16;

Art Unit: 2823

limitations from claim 27, the method wherein removing the first material and the second material from the substrate at substantially equal rates comprises etching, p. 2, ¶ 21;

limitations from claim 28, the method of claim 23, wherein removing the first material and the second material from the substrate at substantially equal rates comprises etching, p. 1, ¶ 16.

### ***Claim Rejections - 35 USC § 103***

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claims 9, 10 are rejected under 35 U.S.C. 103(a) as being unpatentable over Baker as applied to claims 1-8, 20-23, 25, 27, 28 above, and further in view of Imai, Japanese Publication No. 359104523 A.

Baker does not specify using a polymeric as a second material, but Imai does.

Imai teaches

limitations from claim 9, in fig. 3B, the method wherein the second material 2 comprises a polymeric material, CONSTITUTION;

limitations from claim 10, the method wherein the second material 2 includes at least one of the polymer groups comprising epoxies, acrylics, silicones, urethanes, siloxanes and Parylenes<sup>TM</sup>: epoxy, CONSTITUTION.

It would have been obvious to a person of ordinary skill in the art at the time the invention was made to recognize that combining Imai's process with Baker's invention would have been beneficial because the invention allows for further structures to be attached to the substrate.

Claims 11, 16-19 are rejected under 35 U.S.C. 103(a) as being unpatentable over Baker as applied to claims 1-8, 20-23, 25, 27, 28 above, and further in view of Buchwalter et al., US Publication No. 2004/0110010 A1.

Baker does not specify the application method of the second material to the substrate, but Buchwalter does. Buchwalter teaches

limitations from claim 11, the method wherein the second material is a flowable material and is applied to the bare surface by one of screen-coating, stencil-coating, and spin-coating: spin-coating, p. 4, ¶ 52;

limitations from claim 16, the method wherein the second material is one of a thermoset polymer and a radiation cross-linkable polymer, and wherein the second material is applied to the bare surface in a flowable state and cured to a hardened state, p. 4, ¶ 52, thermosetting during the brief heating stage;

limitations from claim 17, the method wherein the second material comprises an epoxy, and the epoxy is partially cured to a tacky state prior to application to the bare surface and further cured to bond to the bare surface and harden, p. 4, ¶ 52, once the epoxy is mixed with the hardener, the epoxy starts its curing process and becomes tacky;

Art Unit: 2823

limitations from claim 18, the method further comprising hardening the second material on the bare surface, p. 4, ¶ 52;

limitations from claim 19, the method wherein hardening the second material comprises curing the second material, p. 4, ¶ 52.

Buchwalter gives motivation in p. 2, ¶ 23-26. It would have been obvious to a person of ordinary skill in the art at the time the invention was made to recognize that combining Buchwalter's process with Baker's invention would have been beneficial because the invention since parts can be adhered and removed and reused if needed.

Claims 12-15 are rejected under 35 U.S.C. 103(a) as being unpatentable over Baker as applied to claims 1-8, 20-23, 25, 27, 28 above, and further in view of Bennett et al., U.S. Patent No. 6,235,387 B1.

Baker does not specify using the second material as a semisolid, but Bennett does. Bennett teaches

limitations from claim 12, the method, wherein the second material is at least a semisolid element and applying comprises laminating the at least a semisolid element to the bare surface, col. 22, line 31 - col. 23, line 23;

limitations from claim 13, the method of claim 12, wherein the at least a semisolid element comprises one of a tape and film: tape col. 22, line 31 - col. 23, line 23;

limitations from claim 14, the method of claim 12, wherein the at least a semisolid element comprises a layer of the second-material placed on a backing layer, and applying comprises applying the layer of the second material to the bare surface



Art Unit: 2823

and removing the backing layer: PET release liner, col. 22, line 31 - col. 23, line 23;

limitations from claim 15, the method of claim 14, further comprising applying a release layer to the backing layer before placing the second material thereon, and wherein removing the backing layer comprises releasing the layer of the second material from the backing layer using the release layer, col. 22, line 31 - col. 23, line 23.

Bennett gives motivation in col. 4, line 65 - col. 5, line 19. It would have been obvious to a person of ordinary skill in the art at the time the invention was made to recognize that combining Bennett's process with Baker's invention would have been beneficial because the invention provides an adhesive that is substantially free of fugitive or migratory surfactants and tackifiers.

Claims 24, 27 are rejected under 35 U.S.C. 103(a) as being unpatentable over Baker as applied to claims 1-8, 20-23, 25, 27, 28 above, and further in view of Stanley Wolf Ph.D. and Richard N. Tauber Ph.D. in Silicon Processing for the VLSI Era, Volume 1: Process Technology, Lattice Press, 1986, pp. 238-9.

While Baker does specify removing some of the first material prior to applying the second material, Baker does not specify using mechanical abrasion of the substrate. This is left to Wolf, V. I. Wolf, teaches

limitations from claim 24, the method of claim 23, wherein removing first material from the substrate prior to applying the second material to the bare surface is

effected by a process including mechanical abrasion of the substrate, pp. 238-9, under section 4.4.11;

limitations from claim 26, the method of claim 23, wherein removing the first material and the second material from the substrate at substantially equal rates comprises planarizing the substrate from the bare surface, pp. 238, first paragraph under section 4.4.11;

Wolf gives motivation in pp. 238, first paragraph under section 4.4.11. It would have been obvious to a person of ordinary skill in the art at the time the invention was made to recognize that combining Wolf's process with Baker's invention would have been beneficial because the invention can rapidly remove material while keeping the surface planar.

### ***Response to Arguments***

Applicant's arguments filed 24 January 2004 have been fully considered but they are not persuasive. Applicant argues Baker does not teach the removal of the first and the second films at substantially equal rates.

Examiner stipulates there are differences between the disclosure of the application and the prior art of record. However, examiner respectfully disagrees that Baker does not contain the above stated limitations. As a reminder, Congress holds examiners to interpret claims as broad as reasonably possible (see below).

Baker in fig. 1 starts with a bare wafer, the first layer, step 100, then in steps 105-115 adds and bonds at least a second material. Between steps 120 and 150, Baker removes the at least second film from the wafer. As previously cited, removing the at least a second film includes planarizing the substrate from the bare surface, p. 2, ¶ 21. In that paragraph, Baker states, "examples of removal processes include wet and dry etching, chemical-mechanical-polishing (CMP) and grinding." In all these methods, in order to remove the at least second layer, some of the substrate, or first layer must be removed. All surfaces are rough or uneven, given a fine enough scale, as the atom components do not possess perfectly flat tops, and typically there are hills, valleys, and slopes of much larger scale. Thus, in order to completely remove by etching or planarizing the at least second layer, some of the first layer, or substrate, must be removed as well. Further, Baker never limits his invention to specifying any of the variable elements: the concentrations of the etchants, the abrasiveness or RPMs of the CMP or grinder. As such the practitioner may freely increase or decrease any of the variables to produce a desired removal rate, or even to switch the process used for each material, as the independent application claim does not limit the removal process to the one particular type. Further, the added qualifier of 'substantially', a term subjective to the user, in front of 'equal rates', and Baker's invention encompasses the scope of the independent claim.

Examiner must give claims their broadest reasonable interpretation, MPEP §2111, "During patent examination, the pending claims must be 'given the broadest reasonable interpretation consistent with the specification.' Applicant always has the

Art Unit: 2823

opportunity to amend the claims during prosecution and broad interpretation by the examiner reduces the possibility that the claim, once issued, will be interpreted more broadly than is justified, *In re Pratter*, 415 F.2d 1393, 1404-05, 162 USPQ 541, 550-51 (CCPA 1969), *In re Morris*, 127 F.3d 1048, 1054-55, 44 USPQ2d 1023, 1027-28 (Fed. Cir. 1997)." Also see *In re Zletz*, 13 USPQ 2d. 1320 (Fed. Cir. 1989).

For the §103(a) rejections, the applicant may not attack the references individually, but as a combination (see below). For Baker in view of Imai, the motivation, as cited above, would have been beneficial because the invention allows for further structures to be attached to the substrate, even for a short period of time. For Baker in view of Buchwalter, the motivation, as cited above, would have been beneficial because the invention since parts can be adhered and removed and reused if needed. This is not an inconsequential feature for semiconductor work and rework. For Baker in view of Wolf, the motivation, as cited above, would have been beneficial because the invention can rapidly remove material while keeping the surface planar. Wolf proffers further evidence on the removing of a second material from a first material, the substrate, by using CMP, which will remove some of the first material from the edges of the substrate, and also using an etchback for removing the rest of the second material and thus removing more of the first material.

As a rule, obviousness is based upon what the "references taken collectively would suggest to those of ordinary skill in the art." *In re Rosselet*, 146 USPQ 183, 186 (CCPA 1965). Furthermore, one cannot show non-obviousness by merely attacking

Art Unit: 2823

references individually where the rejections are based on combinations of references.

*In re Keller*, 208 USPQ 871 (CCPA 1981); *In re Merck & Co., Inc.*, 231 USPQ 375 (Fed. Cir. 1986). Instead, there must be an absence of "some teaching, suggestion or incentive supporting the prior art combination that produces the claimed invention." *In re Bond*, 15 USPQ2d 1566, 1568 (Fed. Cir. 1990). "Just as piecemeal reconstruction of the prior art by selecting teachings in light of [the] disclosure is contrary to the requirements of 35 USC § 103, so is the failure to consider as a whole the references collectively as well as individually." *In re Passal*, 165 USPQ 720, 723 (CCPA 1970).

For the above reasons, the rejection is deemed proper.

### ***Conclusion***

**THIS ACTION IS MADE FINAL.** Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire **THREE MONTHS** from the mailing date of this action. In the event a first reply is filed within **TWO MONTHS** of the mailing date of this final action and the advisory action is not mailed until after the end of the **THREE-MONTH** shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than **SIX MONTHS** from the mailing date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to William M. Brewster whose telephone number is 571-272-1854. The examiner can normally be reached on Full Time.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Olik Chaudhuri can be reached on 571-272-1855. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

A handwritten signature in black ink that reads "William M. Brewster". The signature is written in a cursive, flowing style.

4 April 2005  
WB